AVIATOR INEXPERIENCE

A thesis presented to the faculty of the U.S. Army Command and General Staff College in partial fulfillment of the requirements for the degree

MASTER OF MILITARY ART AND SCIENCE
General Studies

by

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B.B.A.S., North Georgia College, 1988

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This study is an analysis of the adequacy of the current aviation training doctrine. Over the last ten years, aviator experience levels have decreased. This erosion of experience has an enormous impact on aviation unit readiness and the readiness of the United States Army. The study is supported by an overview of the perceived inexperience. It quantifies this lack of experience with statistics and facts that, in fact, identify an actual inexperience problem. This thesis analyzes the current Aircrew Training Program to determine if the Aircrew Training Program adequately applies the principles of training found in Field Manual (FM) 25-101. This thesis draws several conclusions. First, a disconnect exists between the Aircrew Training Program and the principles of training outlined in FM 25-101. Second, the Combined Arms Training Strategy lacks "teeth." The document fails to provide regulatory guidance to the field; therefore, much of the necessary training is not performed. Third, current simulation devices do not adequately train aviators to the needed fidelity necessary to maintain aviator proficiency. Aviation training is hard, but it must be done. The Army cannot afford to sacrifice standards. The cost of failure is too great. Aviators must be ready when called upon. Aviation training is hard, be it must be done. We can not afford to sacrifice standards. The cost of failure is too great. Many soldiers depend on aviators to be proficient and decisions today can ensure that they are not let down.

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The opinions and conclusions expressed herein are those of the student author and do not necessarily represent the views of the U.S. Army Command and General Staff College or any other governmental agency. (References to this study should include the foregoing statement.)

ABSTRACT

AVIATOR INEXPERIENCE by MAJ William K. Gayler, USA, 73 pages.

This study is an analysis of the adequacy of the current aviation training doctrine. Over the last ten years, aviator experience levels have decreased. This erosion of experience has an enormous impact on aviation unit readiness and the readiness of the United States Army.

The study is supported by an overview of the perceived inexperience. It quantifies this lack of experience with statistics and facts that, in fact, identify an actual inexperience problem. This thesis analyzes the current Aircrew Training Program to determine if the Aircrew Training Program adequately applies the principles of training found in Field Manual (FM) 25-101.

This thesis draws several conclusions. First, a disconnect exists between the Aircrew Training Program and the principles of training outlined in FM 25-101. Second, the Combined Arms Training Strategy lacks "teeth." The document fails to provide regulatory guidance to the field; therefore, much of the necessary training is not performed. Third, current simulation devices do not adequately train aviators to the needed fidelity necessary to maintain aviator proficiency.

Aviation training is hard, but it must be done. The Army cannot afford to sacrifice standards. The cost of failure is too great. Aviators must be ready when called upon.

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I owe a huge debt of gratitude to the many professional instructors at the Command and General Staff College and to the professional leaders at Fort Rucker, Alabama, who recognize the need to fix this problem of inexperience. I owe an even greater debt of gratitude to the professionals serving on my thesis committee. Thank you all for your valued assistance, insight, and patience.

To CW3 Dave Gibbs, a good friend whose tragic accident and death gave me the idea to pursue this thesis topic. Dave was by no means inexperienced. But, those who did not know him, initially questioned his experience level following the accident. Many aviators may lack a needed level of experience, proficiency, judgment, or courage. But Dave was not one of them.

Finally, to my wife, Michele, and two daughters, Katie and Maggie; thank you for allowing me the time to complete this project and thank you for your patience and continued support.

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LIST OF ABBREVIATIONS

AH	Attack Helicopter
APART	Annual Proficiency and Readiness Test
AR	Army Regulation
ARI	Aviation Restructuring Initiative
ATM	Aircrew Training Manual
ATP	Aircrew Training Program
AVCATT	Aviation Combined Arms Tactical Trainer
AWS	Area Weapon System
BG(P)	Brigadier General (promotable)
CATS	Combined Arms Training Strategy
CMS	Combat Mission Simulator
CMTC	Combat Maneuver Training Center
CTC	Combat Training Center
DA	Department of the Army
DES	Directorate of Evaluations and Standardization
DCSOPS	Deputy Chief of Staff for Operations
EGI	Embedded Global Positioning System Inertial Navigation System
FAC	Flight Activity Category
FCC	Fire Control Computer
FHP	Flight Hour Program
FM	Field Manual

JRTC	Joint Readiness Training Center
METL	Mission Essential Task List
MG	Major General
MTP	Mission Training Plan
NTC	National Training Center
NVS	Night Vision Sensor/System
OH	Observation Helicopter
RL	Readiness Level
SINCGARS	Single Channel Ground and Airborne Radio Set
STX	Situational Training Exercise
TADS	Target Acquisition and Designation System
TC	Training Circular
TRADOC	Training and Doctrine Command
UH	Utility Helicopter
USAAVNC	United States Army Aviation Center
USASC	United States Army Safety Center

CHAPTER 1

INTRODUCTION

Background

Are aviators in operational units inexperienced and incapable of safely performing their mission to standard? If the answer to this question is yes, this lack of experience could have an enormous impact on the U. S. Army and must be addressed. Over the past several years, the Aviation Branch of the Army has been asked to do an enormous amount of work to support the nation's objectives and protect the United States' national interests. In 1999, while Task Force Hawk prepared for operations in Albania, several flight-related incidents or accidents occurred that negatively impacted the mission of Task Force Hawk. As a result of these incidents, some senior commanders have become concerned that their aviators lacked experience. In fact, Brigadier General (BG) Dick Cody, Task Force Hawk Assistant Commander for Air, "expressed particular concern about the experience level of the commissioned officers who command Apache units" (Naylor 1999, 8). Lack of available flight time, training restrictions (e.g., live fire exercises, nap-of-the-earth training, altitude restrictions, and night system training), pilot retention, availability of aircraft, and numerous other factors indicate a real problem.

After the second AH-64 Apache helicopter crash in Albania, the Army's aviation leaders wanted to know what is causing the high accident rates. General Cody attributes, among other things, young leader's inexperience: "most importantly, we are placing them [commissioned officers] and their unit at risk when we have to ramp up for a real world crisis" (Naylor 1999, 8). This perceived lack of experience is of major concern for the readiness of the Army's aviation units and the Army, as a whole.

The effectiveness of aviation training and the Army's ability to adapt it to keep up with advances in technology will have a profound impact on the future of the Army Aviation Branch and its soldiers. With the recent rise in deployments worldwide supporting many operations other than war, the Army relies more and more on the vast and diverse capabilities of its aviation arm. Aviation is the most mobile, lethal, capable, and diverse asset that division or corps commanders have at their disposal. If a corps or division experiences any degradation in their aviation capability, then they suffer a reduction in their overall capability and combat effectiveness. In these times of a downsized army, this is clearly unacceptable. The Army must maximize the capabilities and effectiveness of every system, unit, and soldier remaining in the force and ensure that soldiers are trained and ready to succeed with the fewest losses possible.

As the military moves toward a more joint, multinational environment, it is critical to the Army's future success to examine its training process. Optimally, as technology advances, the job of the pilot should be made simpler. Instead, there is a greater workload being placed on these aviators while deploying them to tougher tactical environments that require them to focus at the task at hand. Since the most important thing an army does in peacetime is to train for war, aviator training is the focus of this research. It is the primary goal of this paper to answer the question: Is attack aviator inexperience a result of the TC 1-210, *Aircrew Training Program Commander's Guide to Individual and Crew Standardization*?

There are four secondary questions: (1) Does the Army even have an attack aviator experience problem? (2) Does the Aircrew Training Program adequately apply the training principles outlined in FM 25-101, *Battle Focused Training*? (3) Does a

disconnect exist between the Army's training doctrine outlined in FM 25-101 and the aircrew training doctrine established in TC 1-210? Lastly, (4) Should the Army modify the way attack aviators are trained to ensure that they are adequately prepared to conduct low, medium, and high intensity combat operations?

A trend that is apparent in one organization is usually present in others as well. Looking at trends in Army aviation, compiled by the United States Army Safety Center (USASC), USASC identified aircrew inexperience and leader involvement as contributing factors in numerous aviation accidents during 1998 (United States Army Safety Center, *Trends* 1999). As a result of this perceived inexperience, the Aviation Branch is taking a hard look at aviator experience levels. This is not a new a topic. In fact, the lack of experience and proficiency at flight tasks has been reviewed several times in the last three years. Erosion of aviator skills is a concern that could have an enormous impact to the readiness of the Army. Whether any decline in proficiency is a result of training, budget, or any other reason, it has tremendous ramifications. If the Army's attack aviators are truly inexperienced, every effort should be made to investigate the cause and develop solutions.

In order to understand the problem, it is necessary to define experience as it relates to aviators. Webster's Dictionary defines experienced as, "wise or skillful in a particular field; expert, practiced" (1995, 210). One factor in determining the experience of an aviator is the number of flight hours an individual has accumulated. This indicator is further broken down by hours by airframe. An aviator could have many hours in one type airframe, but if he or she has little flight hours in their current airframe, they are relatively inexperienced. Relative, at least, to that airframe. Flight hours are measured in

tenths of hours and commence once the helicopter has lifted off the ground (Headquarters, Department of the Army, AR 95-1 1997, 3). This flight time measures their "practice" or their "encounters" that result in knowledge. This is not the only indicator of proficiency. The quality of the flight hours flown is also critical to ensuring proficiency in flight tasks. General Cody alluded to this, after conducting sixteen mission rehearsal exercises in Albania, "I would put the Task Force Hawk pilots and commanders up against anyone . . . but it was painful and high risk [during] the first three weeks" (Naylor 1999, 8). In addition to quality, the frequency in which a unit trains is equally as important. "Units naturally fluctuate in proficiency because of many factors, including training frequency" (Headquarters, Department of the Army, FM 25-101, 1990, 1-6).

This study focuses on three major areas. First, this thesis examines the perceived inexperience problem to determine if the problem truly exists. Second, it examines how attack aviators are currently trained. This foundation provides an understanding of the complexity of the subject. Since "experienced" is synonymous with "trained," it is important to understand the process by which the Army trains its aviators and aircrews to perform their missions. The focus of this examination is at the unit level. It is at the unit level that aviators and aircrews train to proficiency in their unit's specific mission essential tasks. Third, it focuses on elements of TC 1-210, *Aircrew Training Program (ATP) Commander's Guide to Individual and Crew Standardization*, to determine how effectively this document follows the principles of training outlined in FM 25-101, *Battle Focused Training.* To draw conclusions about how effectively the ATP develops trained

and experienced aviators, the thesis conducts an analysis of these training manuals to determine how well one supports the other.

After evaluating major training topics within the ATP against principles of training established in FM 25-101, a disconnect between the Army's training doctrine and the aviation training doctrine becomes apparent. This lack of linkage between the ATP and FM 25-101 contributes to training deficiencies and lack of aviator experience within attack aviation units. Based on this examination, the thesis identifies training deficiencies that exist as a function of the ATP and provides possible solutions to correct these deficiencies.

Assumptions

1. The data involving aviation accidents and flight proficiency/experience are accurate. The organizations that collect this information are directed to maintain this information and provide it, as needed, to aviation units worldwide.
2. The analysis of the Aircrew Training Program and its relationship to the Army's training doctrine, FM 25-101, provides sufficient data to draw conclusions as to how effective the ATP is as a training tool for attack aviators.
3. Any disconnect between Army doctrine and aviation training doctrine contributes to any training deficiency. This assumption is based on the fact that the Army meticulously documents training imperatives through the use of doctrinal manuals. As a result, units rely on doctrine to provide guidance and direction to ensure that they train sufficiently. Any disconnect would mean a lack of direction that would result in a training deficiency, therefore, contributing to a lack of proficiency or experience.

Key Terms

AH-64A Apache. US Army attack helicopter designed to destroy massed enemy armored formations. The "A" model Apache is widely recognized as the most lethal attack helicopter in the world.

Directorate of Evaluations and Standardization (DES). The organization in Fort Rucker, Alabama that ensures standardization of all Army aviation units with regard to training, safety, maintenance, and others. This organization is composed of senior aviators and staff that report directly to the Commanding General of the Aviation Branch on any issue affecting units in the field.

Flight Activity Category (FAC). These are "commander" designated positions that denote the level of proficiency commanders expect their aviators to maintain by their relative position in the unit. There are three levels FAC 1, FAC 2, and FAC 3. FAC 1 aviators require the highest degree of proficiency in tactical operations, FAC 2 requires less, and FAC 3 aviators will not perform aircrew duties, but must utilize a compatible simulator to maintain skills to qualify for flight incentive pay (Headquarters, Department of the Army, TC 1-210 1996, 2-2).

FM 25-100, *Training the Force*. The Army's standardized training doctrine which establishes how to plan, execute, and assess training at all levels (Headquarters, Department of the Army, FM 25-101 1988, i).

FM 25-101, *Battle Focused Training*. The Army's cornerstone doctrinal document which supports FM 25-100 by outlining "how to" guidelines for training at all levels. It builds on the importance of "Battle Focused" training (Headquarters, Department of the Army, FM 25-101 1990, foreword).

Nonlinear. Refers to a tactical environment that has no defined lateral, vertical, and horizontal boundaries from which the threat will present itself (i.e., Bosnia or Kosovo).

Power Management. An aviator's use of restricted aircraft power under a given condition such as, high gross weight, high density altitude, or some other condition that limits the amount of available power necessary for flight.

Readiness Level (RL). Identifies which training phase an aviator is participating in and measures crew member readiness, as outlined in the Aircrew Training Manual (Headquarters, Department of the Army, TC 1-210 1996, 2-4).

TC 1-214, *Aircrew Training Manual*. The training circular which outlines all individual and crew training requirements for an AH-64A Apache battalion. It specifies which tasks, condition, standards, and iteration requirements must be met by each individual aviator within a specified period of time. This enables crewmembers to maintain proficiency in their respective aircraft.

TC 1-210, *Commander's Guide to the Aircrew Training Program*. The "training circular . . . designed to aid commanders at all levels to develop, implement, and administer a comprehensive aircrew training program." (Headquarters, Department of the Army, TC 1-210 1996, preface).

Situational Training Exercises (STX). "STX are mission-related, limited exercises designed to train one collective task, or a group of related tasks and drills, through practice" (Headquarters, Department of the Army, FM 25-101 1990, C-7).

Training and Doctrine Command (TRADOC). The United States Army Training and Doctrine Command is the major Army command responsible for all training and doctrine issues that impact units in the field.

United States Army Safety Center (USASC). The organization responsible for developing safety procedures for the Army, implementing procedures, and monitoring status of all safety aspects of Army business. This organization reports quarterly to the Chief of Staff of the Army with status of safety in the Army.

Limitations

1. This is not an all-inclusive analysis. Only the major principles from FM 25-101 and TC 1-210 are analyzed. This is sufficient information, however, to make logical conclusions and develop a hypothesis.
2. The thesis examines attack aviator training requirements based on an average AH-64A *Apache* helicopter battalion.
3. The thesis does not examine external factors that affect an aviator's available training time. For example, it does not study additional duties, meetings, simulator exercises, and others that distract from building aviation experience.

Delimitations

1. The thesis only focuses on unit training and not the period of time that an aviator is undergoing initial flight training in Fort Rucker, Alabama.
2. The examination of the ATP only focuses on major topics and not every subject area within the ATP. The study does not compare every ATP topic against every principle of training outlined in FM 25-101. Topics will be compared based on relevance.

3. The thesis examines a typical AH-64A battalion. It does not evaluate fixed wing aviator training, or other rotary wing training.
4. There is no budget analysis done in relation to flight hour programs. Only raw flight hour allocations are addressed.

CHAPTER 2

LITERATURE REVIEW

The content of this study is gathered from four major sources: government manuals (field manuals, training publications, and doctrinal manuals), articles (unpublished theses and bulletins), interviews, and information briefings.

The government manuals are particularly useful to apply current specific information related to how the Army trains attack aviators. This information, in most cases, is regulatory. This means that each unit has little to no latitude to adjust its training programs outside of the guidelines specified in these manuals. In other words, there is no way to "work around" these items in order to fit into a unit's training plan. The technical nature of flying and the consequences of lack of standardization demand strict adherence to these manuals. They provide the basis for the majority of the analysis of the effectiveness of aviator training.

To effectively manage an aircrew training program, commanders use the Training Circular (TC) 1-210, *Aircrew Training Program Commander's Guide to Individual and Crew Standardization,* commonly referred to as the *Commander's Guide.* The *Commander's Guide*; individual aircrew training manuals; field manuals; and specific training requirements that are unique to that unit make up a unit's Aircrew Training Program (ATP). The *Commander's Guide* outlines an aviation unit's basic training doctrine.

Doctrine exists to provide guidance to commanders concerning training. Each doctrinal manual builds upon others to ensure standardized training. The two primary

manuals used for this analysis are the Army's training doctrine manual FM 25-101 and the aviation unit's primary training doctrine TC 1-210.

Articles add a degree of insight into training issues. The thesis uses information gathered from articles in various magazines. These articles highlight senior leader perspectives regarding issues affecting the training and readiness of aviation's junior leaders. Additionally, information gathered from electronic bulletins (internet homepages) helps to maintain the accuracy of certain information, as these sites are updated periodically to pass information to the units throughout the Army.

Interviews are necessary to gather first-hand information to draw additional insight into the Army aviation training effectiveness. The thesis will examine information from interviews with an AH-64A Apache battalion commander, battalion operations officer (S3), company commander, and one or two senior instructor pilots to gather "front-line" opinions and observations of the perceived lack of aviator experience. This study will additionally rely, in small part, on the author's own aviation experience as a trainer.

To add statistical and factual data concerning effectiveness of training, this paper will reference several information briefings on related topics. This information is gathered from organizations that report indirectly to the Commanding General, United States Army Aviation Center and Fort Rucker (USAAVNC) and directly to the Chief of Staff of the Army and to Headquarters Department of the Army, Deputy Chief of Staff for Operations. Briefings capture a training year in such quantifiable terms as accident rates, factors contributing to accidents, training deficiencies, and trends in aviation units that impact training.

CHAPTER 3

RESEARCH METHODOLOGY

The purpose of this chapter is to establish a methodology to evaluate how effective the Aircrew Training Program is in training attack aviators. First, in order to accomplish this purpose, this thesis determines whether an inexperience problem really exists. Second, the thesis describes how Army aviation units currently train based on doctrinal and regulatory publications. This provides a general background into the complexity of aviation training and what it takes to establish experience.

In addition to assessing quantifiable data on aviator experience, data collected via telephonic interviews lends insight into unit level training concerns. This information is necessary because both the quality and frequency of training that an aviator receives contribute to developing an experienced, proficient aviator. Telephonic interviews with battalion commanders, company commanders, and instructor pilots assisted in developing a control group that is representative of other Apache battalions and their quality and frequency of training.

The research assesses an AH-64A Apache battalion's ability to effectively conduct collective training. To maintain proficiency, units must develop training plans that maximize training by repetition. Any skill gained is perishable, therefore, it must be exercised over and over to maintain that level of proficiency. The study examines a typical battalion annual flight hour allocation (not in terms of dollars but in terms of flight hours) to determine what percentage of a unit's flying hour program actually is dedicated to the collective training of its aviators. The study also conducts a functional analysis of how well the ATP reinforces the principles of training outlined in FM 25-101.

Since "FM 25-100 establishes our training doctrine and FM 25-101 applies . . . in the development and execution of training programs" (Headquarters, Department of the Army, FM 25-101 1990, foreword), the study examines major topics within TC 1-210 and compares their effectiveness in adequately applying these principles of training. Using this technique, hypotheses are developed concerning the effectiveness of TC 1-210.

Conclusions are based on the unit ATP's ability train to proficiency by effectively linking to the Army's doctrine in FM 25-101. The thesis identifies problem areas and makes recommendations for possible solutions to these shortcomings in training. It also speculates on the future effectiveness of the aviation branch's training program and identifies needed changes based on these deficiencies.

Training Program Analysis

Inexperienced

As stated in the introduction, concerns exist over the ability of attack aviators to safely accomplish their mission to standard. One of the measures of experience is the number of flight hours an aviator has accumulated. In order to measure the flight hours across the military, this study analyzed data collected by the Directorate of Evaluations and Standardization (DES). The DES mission is: "To serve as the proponent for the Department of the Army's Aviation Standardization Program and to evaluate the implementation of this program for the Department of the Army Deputy Chief of Staff for Operations and Plans (DCSOPS)" (DES 1999). DES collects this data in order to establish trends within the Aviation Branch to identify training areas that need improvement.

According to its Director Colonel James L. Mowery, DES travels throughout the world to visit aviation units. Their findings are a result of proficiency flight evaluations, oral evaluations, and written evaluations.

> We are in one of the toughest times since the Korean War for aviator proficiency. Funds are short and flying hours are at an all time low. The challenge is to use the hours we have to gain the utmost proficiency possible. Every flight hour requires the utmost scrutiny for its value added to proficiency. Preparation is key. (Mowery 1999)

In the course of visiting units and collecting data, DES identified several trends throughout the Army. The most common trends are:

1. Commissioned pilots in command are not the norm.
2. Collective and individual training is not balanced.
3. Simulator periods are not stressful or demanding.
4. Emergency procedure training lacks rigor and stress.
5. Task lists are not tailored to individual aviators (DES 1999).

DES developed several recommendations to correct some of these trends. First, continue training with a strong mission focus. This is necessary to ensure units are trained for combat, the environment in which every aviator must be prepared to operate. Second, balance individual and collective training. It is necessary to tailor the ATP to individual aviators in order to train them to the needed level of proficiency. Although not a recommendation from DES, it is also necessary to tailor collective training to specific units. This is critical to ensure training opportunities are maximized. Third, DES recommends that units brief the training assessment of basic, mission, and commander designated tasks to bring focus and visibility on these areas. Lastly, add individual and collective proficiency to the unit's Mission Essential Task List (METL). This would

ensure that units cannot report a "trained" status when their individual pilots are not trained to the standards of the ATP.

In 1995, the Aviation Branch reorganized under the Aviation Restructuring Initiative (ARI). The purpose was to better streamline logistics for aircraft by establishing pure battalions. This meant that all AH-64A Apache aircraft were in one battalion and all other types of aircraft were in their own battalions.

Before this reorganization, an Apache battalion consisted of eighteen Apaches, thirteen OH-58 aircraft, and three UH-60 aircraft. As a result, the battalion maintained parts and logistics trails for three different type aircraft. So, the reorganization looked good in theory.

In reality this reorganization cost aviator training resources. Before ARI, each battalion had thirty-four aircraft available to support seventy-two aviators. Each battalion now only has twenty-four aircraft to support sixty-five aviators. This is a 30 percent decline in aircraft with only a 10 percent decline in the number of pilots that were required to fly. The unforeseen result was less flight time for the aviators in the battalion. According to USAAVNC, "flight experience has declined in the past ten years by seventy flight hours per aviator per year" (Aviation Planning Group 1999).

The United States Army Safety Center (USASC) also collects data to establish trends within the Aviation Branch to identify any connection between the number of accidents and any root cause of the accidents. This data indicates that there is a direct relationship between the amount of flight experience and the likelihood of an accident. As of September 1999, the Aviation Branch has had eighteen Class A aviation flight accidents. A Class A accident is one that results in "total costs of 1,000,000 dollars or

more, destruction of an Army aircraft, fatality, or permanent total disability" (USASC, *Safety Statistics* 1999). This represents an increase of 33.50 percent over the same period last year and an incredible 70.60 percent over the average of the last five years.

USASC identified three major trends that contributed to these accidents, "aircraft power management, crew coordination, and junior leadership failure" (USASC 1999).

Power management can be traced immediately back to the ATP and a training failure. Within the TC 1-210, there are specific additional training requirements for differing environmental conditions. There is also a specific task within the *Aircrew Training Manual* to verify aircraft performance planning, based on environmental conditions.

Crew coordination is a function of training as well. Crew coordination is a mandatory task that is evaluated annually as part of the Annual Proficiency and Readiness Test (APART). "The APART measures a crew member's proficiency and readiness" (Headquarters, Department of the Army, TC 1-210 1990, 3-16). Crew coordination is outlined in TC 1-210 and is broadly defined as, "interaction between crew members necessary for the safe, efficient, and effective performance of tasks [cockpit]" (Headquarters, Department of the Army, TC 1-210 1996, 1-10). The elements of crew coordination emphasize the interaction of crewmembers and actions to accomplish a task to standard. In accordance with the USAAVNC *Aircrew Coordination Exportable Training Package*, dated December 1992, the elements of crew coordination are:

1. Communicate positively
2. Direct assistance
3. Announce actions

4. Offer assistance
5. Acknowledge actions
6. Be explicit
7. Provide aircraft control and obstacle advisories
8. Coordinate action sequence and timing

The elements are designed to aid experienced and inexperienced crewmembers in the accomplishment of their cockpit duties. Once an aviator becomes more experienced, these coordination elements become more natural. This is not to infer that lesser-experienced aviators cannot use these procedures effectively. But, as they gain experience, their knowledge of why these elements are important grows reinforcing the learning process. Experienced aviators should continue to use these procedures to overcome complacency in the cockpit.

Junior leadership failure can be attributed to inexperience or lack of aviation savvy. As part of leadership development, aviation officers must possess technical and tactical skills to effectively perform their mission. These core competencies are critical to ensure all aviation operations are performed safely and to standard.

The mechanism to ensure that training is not only conducted safely but that it also contributes to the mission readiness is the aircrew mission briefing. No aviation mission begins without the approval of a designated briefing officer, in accordance with AR 95-1. "Briefing officers will normally be qualified members of the chain of command (not lower than platoon leader) or operations officers" (Headquarters, Department of the Army, AR 95-1 1997, 5). The purpose is to ensure command involvement and knowledge in every flight. This requirement ensures that scarce flight hour resources are

carefully managed to produce the most training benefit during the course of each flight. Competent briefing officers are critical to this process. AR 95-1 outlines the specific functions of the briefing officer. These functions are to ensure that:

1. The flight is supporting an operational unit mission and is authorized by the unit commander.
2. Assigned crews have been allocated adequate premission planning time.
3. Assigned crew members are qualified and current for the mission.
4. Weather conditions meet minimum requirements to support the mission.
5. Crews are within crew endurance guidelines.
6. Risk management procedures are in place.
7. Required special mission equipment is maintained per published guidance.

Briefing officers are designated based on experience and level of responsibility. However, in most units, platoon leaders and, in some cases, below platoon leader are designated as briefing officers regardless of their level of experience. This is necessary in most units in order to relieve the unit commanders of the responsibility to brief every mission within their command. This task would prove to be unreasonable. This does not, however, require platoon leaders to brief missions that they have no experience to draw from in order to provide adequate guidance to the crew or effectively reduce risk during the mission. In other words, the effects of inexperience can extend beyond the actual cockpit and affect missions even involving experienced crews.

The Aviation Branch has already established a linkage between flight experience and risk when it required that a risk assessment matrix be completed for each flight. The risk assessment matrix is a tabular matrix that establishes risk based on supervision,

planning, crew selection, crew experience, complexity of the mission, and several other factors. The risk value associated with a lesser-experienced pilot is much greater than for a more experienced pilot. This is true even if all other categories are identical; therefore, in accordance with TC 1-210, a lesser-experienced aviator is at greater risk during a flight than a more experienced aviator.

Other contributing factors in developing an experienced, proficient aviator are the quality and frequency of training that an aviator receives. Quality is assessed by a known set of standards that are established for each individual task within the ATM. Aviators must demonstrate proficiency to an instructor pilot in each required task. Once proficiency is attained, aviators must frequently practice each task. The iteration requirements to maintain individual proficiency are outlined in tables 1 and 2. These tables are provided in the AH-64A ATM. Each aviator must perform nearly every task a given number of times in accordance with these tables (see table 1). The "X" in the columns of tables 1 and 2, denote an annual requirement to complete a given task under certain conditions at least once. Commanders may increase this annual requirement based on individual aviator proficiency.

Table 1. Aviator base task and annual iteration requirements

		Station		Evaluations				Iterations		
Task	Title	BS	FS	S	I	NS	NG	D	NS	SM
1000	Conduct crew mission briefing	X	X	X	X	X	X	X	X	X
1001	Plan a VFR flight	X	X	X				X		
1002	Plan an IFR flight	X	X		X			X		
1003	Prepare DD Form 365-4 (Weight and Balance Clearance Form F-Tactical)	X	X					X		
1004	Prepare DA Form 5701-R (UH-60/AH-64 Performance	X	X	X				X		

	Planning Card)									
1005	Perform preflight inspection	X	X	X				X		
1007	Perform engine-start, run-up, hover, and before-takeoff checks	X	X	X	X			X	X	X
1013	Perform NVS operational checks	X	X			X			X	X
1015	Perform ground taxi	X	X			N	X	X	N / G	X
1016	Perform hover power check	X	X	X		X	X	X	N / G	X
1017	Perform hovering flight	X	X			N	X	X	N / G	X
1018	Perform a normal takeoff	X	X	X		N	X	X	N / G	X
1019	Perform a rolling takeoff (minimum power takeoff)	X				X		X	X / G	X
1020	Perform simulated maximum performance takeoff	X						X		X
1021	Perform deceleration/ acceleration	X						X		
1022	Perform traffic pattern flight	X	X	X		N		X	N	X
1023	Perform fuel management procedures	X	X	X	X	X	X	X	G	X
1025	Navigate by pilotage and dead reckoning	X	X			X	X	X	N / G	X
1026	Perform doppler navigation		X	X		X	X	X	G	X
1027	Perform before-landing check	X	X	X	X			X	X	X
1028	Perform VMC approach	X	X	X		N	X	X	N / G	X
1029	Perform roll-on landing	X						X	X	X
1031	Perform confined area operations	X	X	X		X	X	X	G	X
1032	Perform slope operations	X	X	X		X	X	X	G	X
1033	Perform terrain flight mission planning	X	X					X	x	
1034	Perform terrain flight takeoff	X	X	X		X	X	X	G	X
1035	Perform terrain flight	X	X	X		X	X	X	G	X
1037	Perform NOE deceleration	X	X	X		X	X	X	G	X
1038	Perform terrain flight approach	X	X	X		X	X	X	G	X
1039	Perform high-speed flight	X	X					X		

1051*	Perform standard autorotation	X	X	X				X		X
1052*	Perform simulated engine failure, IGE hover	X	X							X
1053*	Perform simulated single-engine failure at altitude	X	X	X	X	N	X	X	G	X
1054*	Perform simulated single-engine failure, OGE hover	X	X	X				X		X
1055*	Perform single-engine landing	X	X	X		N	X	X	G	X
1062*	Perform ECU lockout operations	X	X	X				X		X
1063*	Perform procedures for stabilator malfunction	X	X							X
1064	Perform terrain flight navigation	X	X	X		X	X	X	G	X
1068*	Perform or describe emergency procedures	X	X	X	X	X	X	X	G	X
1075	Perform instrument takeoff	X								X
1076*	Perform radio navigation	X	X		X			X		X
1077*	Perform holding procedures	X	X		X			X		X
1078*	Perform unusual attitude recovery	X	X		X	X		X	X	X
1079*	Perform radio communication procedures	X	X		X			X		X
1080*	Perform procedures for two-way radio failure	X	X					X		X
1081*	Perform nonprecision approach	X	X		X			X		X
1082*	Perform precision approach	X	X		X			X		X
1083*	Perform or describe inadvertent IMC procedures/VHIRP	X	X	X	X	X	X	X	G	X
1090	Perform masking and unmasking	X		X		X		X	X	X
1094*	Identify major US or allied equipment and major threat equipment	X	X	X						X
1095*	Operate aircraft survivability equipment	X		X				X		X
1098	Perform after-landing tasks	X	X	X	X			X	X	X
1099*	Operate Mark XII IFF System	X		X				X		
1100	Perform TADS operational checks		X	X		X		X	X	X
1101	Perform TADS boresighting		X	X		X		X	X	X
1102	Perform TADS sensor operations		X	X		X		X	X	X
1103	Perform IHADDS boresighting	X	X	X		X		X	X	X
1104	Perform IHADSS video adjustments	X	X	X		X		X	X	X

1105	Perform IHADSS operations	X	X	X		X		X	X	X
1106	Perform data entry procedures		X	X				X	X	X
1107*	Perform aircraft position update function procedures		X	X				X	X	X
1108*	Perform target store procedures		X	X				X	X	X
1119	Perform firing position operations	X	X	X				X	X	X
1140*	Engage target with Hellfire	X	X	X						X
1141*	Engage target with the ARCS	X	X	X						X
1142*	Engage target with the AWS	X	X	X						X
1143*	Perform weapons initialization procedures	X	X	X						X
1144	Perform target handover	X	X	X				X	X	X
1145	Perform IHADSS target tracking	X	X	X				X	X	X

Legend:
BS--backseat base tasks.
FS--front seat base tasks.
S--tasks that are mandatory for standardization flight evaluation.
I--tasks that are mandatory for instrument flight evaluation.
NS--tasks that are mandatory for night system evaluation/night system iteration.
NG--tasks that are mandatory for night vision goggles flight evaluation.
D--annual day iteration requirements.
SM--annual simulator iteration requirements.
N--tasks that require one iteration annually of both night system and unaided night flight. (Under the NS column of Evaluations is a mandatory unaided night and NS evaluation item.)
G--tasks that require one iteration of both night system and night goggles annually.
*--tasks that will be evaluated in the simulation device (AH64CMS or CWEPT), if available, when they cannot be evaluated in the aircraft.

Source: TC 1-214, 1992, Figure 5-1. Aviator base task and annual iteration requirements

Table 2. Aviator mission task and annual iteration requirements

		Station		Evaluations				Iterations		
Task[1]	Title	BS	FS	S	I	NS	NG	D	NS	SM
2004	Perform pinnacle or ridgeline operation	X	X					X		
2006	Perform high/low G flight	X						X		
*2007	Perform aerial observation	X	X					X	X	
2008*	Perform evasive maneuvers	X	X					X	X	X
2009	Perform multiaircraft operations	X	X					X	X	
*2018	Reconnoiter and recommend	X	X						X	

	an LZ or a PZ									
*2019	Perform a route reconnaissance	X	X						X	
2020	Call for and adjust indirect fire	X	X					X		
2021	Transmit information using visual signal-ing techniques		X					X		
2042*	Perform laser spot tracker operations		X					X	X	X
2043	Perform FARP procedures	X	X						X	
2044	Perform actions on contact	X	X						X	X
2049*	Search for and identify targets with TADS		X					X	X	
2050	Select appropriate weapon system	X	X					X	X	X
2052*	Perform target tracking with the TADS		X					X	X	
2055	Operate on-board recording system		X						X	
*2061	Reconnoiter and recommend a holding area	X	X					X	X	
*2063	Perform a security mission	X	X							
*2065	Call for and control a tactical air strike	X	X					X	X	
*2066	Perform a zone reconnaissance	X	X						X	
*2067	Perform an area reconnaissance	X	X						X	
2069*	Perform diving flight	X						X		
2072[2]	Perform emergency proce-dures for actual or simulated NVG failure		X				X		G	
2082	Perform techniques of movement	X						X		X
2083	Negotiate wire obstacles	X	X					X	X	X
2090*	Perform tactical communi-cation procedures and electronic counter-countermeasures	X	X					X	X	X
2091	Transmit a tactical report		X					X		

NOTE: The legend in Figure 5-1 applies to this figure also.
[1]These 2000-series tasks are mandatory only if selected as part of the Commander's Task List.
[2]Task 2072 is a mandatory NVG iteration.

Source: TC 1-214, 1992, Figure 5-2. Aviator mission task and annual iteration requirements

The process is designed to ensure repetition of learning. The required frequency of training supports the principles of training in FM 25-101. Frequent quality training builds aviator flight time and experience. It is logical to state that an aviator with little flight time is less likely to be experienced; whereas an aviator with a great deal of flight time is more likely to be experienced. This may not always be true. For example, aviators with a great deal of flight time may not be any more experienced based on poor quality of training. Quality training builds experience, but flight time does not necessarily build quality training.

Observer-controllers from the National Training Center (NTC), Joint Readiness Training Center (JRTC), and the Combat Maneuver Training Center (CMTC) noted that units undergoing training at their respective Combat Training Centers (CTC) lacked the collective proficiency of previous years. Both DES and USASC indicate concerns over aviator experience. USAAVNC also acknowledges a decline in the individual aviator experience level. These organizations conducted study and analysis to reach these conclusions. Leaders in the field may or may not have conducted research, but have reached similar conclusions.

It is uncertain whether the issue of experience is actual or perceived. But, until proven otherwise, it will be reality for the field. Inexperience exists and must be corrected. Quality training is the most logical method to accomplish this task.

How Army Aviation Currently Trains

In order for training to be effective, it is necessary for commanders and leaders, at all levels, to understand the ATP. Some mandatory training requirements are dictated by regulations and, to some extent, by doctrine. Mandatory doctrinal training is outlined in

TC 1-210. Essential collective training is based on mission needs; hence, it is largely left to the unit commanders to determine. This selective training must support the unit's mission essential task list (METL). The METL is a "compilation of collective mission essential tasks which must be successfully performed if an organization is to accomplish its wartime mission" (Headquarters, Department of the Army, FM 25-101 1990, glossary-5). The METL must be approved at two command levels above the unit because a unit's METL must support its higher headquarters' mission statement. For this reason, this study focuses predominately on the unit training.

To effectively manage an aircrew training program, commanders utilize the Training Circular (TC) 1-210, *Aircrew Training Program Commander's Guide to Individual and Crew Standardization*, commonly referred to as the Commander's Guide. The *Commander's Guide;* individual *Aircrew Training Manuals;* Aviation Field Manuals; and a battalion's unique training requirements make up a unit's Aircrew Training Program. Central guidance, within the *Commander's Guide,* outlines an aviation unit's basic training doctrine. "This document is the capstone for the Aircrew Training Manual (ATM) series for Army aviators. It is designed to help commanders at all levels to develop, implement, and administer a comprehensive aircrew training program based on the principles outlined in Field Manual (FM) 25-101, *Battle Focused Training"* (Headquarters, Department of the Army, TC 1-210 1996, iv).

The logical place to begin looking at unit training is with individual training requirements for an average aviator. "The foundation for collective proficiency is initially attained by developing individual and crew skills through readiness level progression" (USAAVNC 1998, 2-1). Therefore, it is necessary to start with a

description of an aviator's individual training requirements from assignment to a unit and initial Flight Activity Category (FAC) designation through an aviator's readiness level (RL) progression.

When a new aviator is assigned to a unit, that aviator must meet certain requirements. First, the aviator will be integrated into the battalion's aircrew training program. To accomplish this, "each crew member must present his or her individual flight records to the unit to which assigned within 14 calendar days after reporting for duty" (Headquarters, Department of the Army, AR 95-1 1997, 3). Second, a newly assigned crewmember will receive a "Commander's Evaluation." Its purpose is to determine the initial readiness level of that newly assigned aviator. This evaluation can be a simple, record's examination or it may involve a proficiency flight evaluation. "The commander or designated representative will conduct this evaluation within 45 calendar days of the aviator signing into the unit or the effective date of his or her flying status orders, whichever occurs last" (Headquarters, Department of the Army, TC 1-210 1996, 2-3).

When assigned to a unit, the aviator is designated by Flight Activity Category (FAC). The aviator is designated one of three FAC designations, based on his or her duty position within the unit.

1. FAC 1 designated aviators are the duty positions which require the highest degree of tactical proficiency, usually front-line pilots. Commensurate with their positions, these positions require more flight hours per semiannual period.

2. FAC 2 aviators require less proficiency, therefore, require less semiannual flight hours.

3. FAC 3 aviators are not allowed to perform flight duties in an actual aircraft, but must continue to meet semi-annual simulator flight hour requirements.

Once FAC designated, the aviator must begin readiness level progression. "Readiness levels identify the training phase in which crew members are participating and measure crew member readiness" (Headquarters, Department of the Army, TC 1-210 1996, 2-4). There are three readiness levels: RL 3, RL 2, and RL 1. Simply stated, RL 3 aviators remain RL 3 until that aviator demonstrates proficiency in all basic flight tasks, also known as 1,000 series tasks. Once the aviator demonstrates proficiency to an instructor pilot in these tasks, he or she is progressed to RL 2 status. Likewise, the aviator must demonstrate proficiency in the RL 2, mission tasks (2,000 series tasks), and any commander designated tasks (3,000 series tasks) in order to be progressed to RL 1 status.

The RL 1 aviators are considered mission ready. Each aviator on active duty is given ninety consecutive days to progress between each readiness level. Each of these tasks, with their respective conditions and standards, are outlined in an aircraft specific ATM.

The ATM, as part of the ATP, also establishes how often tasks must be completed or iteration requirements. Commanders may increase the training iteration requirements for an individual aviator based on that aviator's needs. In other words, the commander can and should tailor the iterations based on aviator proficiency. A lesser-experienced pilot may need more iterations annually than a more-experienced one.

Commanders use a Department of the Army Form 7120-R as a contract between the aviator and the commander. This form is called the commander's task list. This task

list identifies the iteration requirements for each task. Iterations may be in accordance with the ATM or more frequently based on each individual aviator's proficiency level. Commanders also use supplemental forms to identify what tasks and how often these tasks must be performed to increase an aviator's proficiency. These forms only apply to individual aviators and not to crews or whole units. Additional training requirements are outlined in both TC 1-214 and TC 1-210. Crewmembers must meet all requirements to be designated RL1 and mission ready.

The relationship between individual tasks, crew tasks, and collective tasks is described in TC 1-210. This guide provides "the link to field manuals, mission training plans, and other doctrinal and training material" (Headquarters, Department of the Army, TC 1-210 1996, iv). The intent of this study is to determine if any disconnect exists between TC 1-210 and the Army's training doctrine outlined in FM 25-101. "TC 1-210 links individual and unit collective tasks. The commander uses FM 25-100 and FM 25-101 to link . . . the individual training program to the collective training program" (Headquarters, Department of the Army, TC 1-210 1996, 1-1). In other words, to determine how effectively the TC 1-210 links individual and crew training to the collective training doctrine.

Collective training conducted at the unit level is the cornerstone of the Aviation training program. Preparing to execute missions at the collective level is the goal of the unit training program. An aviator's ability to operate safely and effectively in a tactical environment is based on this collective proficiency. To determine the effectiveness of the Aircrew Training Program, it is necessary to examine several major topics addressed in

TC 1-210 and compare them with the training principles outlined in FM 25-100 and FM 25-101.

Analysis of FM 25-101 and TC 1-210

The following major topics within the TC 1-210 will be examined to determine how effectively they follow the principles of training outlined in FM 25-101.

1. Individual and collective training integration
2. FAC designation and simulation requirements
3. Additional training requirements (including external factors)
4. Night System and aircraft currency requirements
5. Flying hour programming to support the unit's training plan

The principles of training discussed in FM 25-101, in essence, are the evaluation criteria used to determine the effectiveness of training. These principles are:

1. Train as a combined arms and services team. The synchronization of combat, combat support, and combat service support systems to compliment and reinforce one another.

2. Train as you fight. Units should train in peacetime as they will fight in war. Peacetime training must replicate battlefield conditions.

3. Use appropriate doctrine. Training must conform to Army doctrine. Doctrinal manuals provide leaders correct procedures and principles in order to conduct training properly.

4. Use performance oriented training. Proficiency must be demonstrated, not simply taught. As a soldier's performance levels increase, conditions under which tasks are performed become more demanding while standards remain constant.

5. Train to challenge. Training must challenge. It must be tough, realistic, and mentally and physically demanding.

6. Train to sustain proficiency. Training must continually build on previous training and must be repeated to maintain a level of proficiency. Frequency of training or iterations are critical to sustainment training.

7. Train using multi-echelon techniques. Simultaneous training of more than one echelon on different tasks. Examples include concurrent conduct of different exercises by subordinate elements in a unit, and the training of different tasks by elements of the same unit.

8 Train to maintain. Training to maintain equipment. This equipment is essential to training because without the equipment, no training can occur. This topic has little relevance to the ATP, therefore will not be examined in detail.

9. Make commanders the primary trainers. Leader development is the process the Army uses to develop competent, confident leaders. Commanders must be involved in training to train the trainer. Commanders are the primary trainers within a unit.

CHAPTER 4

ANALYSIS OF TC 1-210 AND FM 25-101

TC 1-210 is the primary document for ensuring that commanders conduct the necessary training. This thesis examines how well it links to the Army's doctrine of FM 25-101. It focuses only on the relevant issues.

Individual and Collective Training Integration

TC 1-210 does refer to FM 25-101 when discussing training collective tasks, especially the METL. It also refers to the use of the FM 1-100 series of publications that cover aviation operations. The FM 1-100 series describes how to fight and operate by outlining tactics, techniques, and procedures (TTPs) for accomplishing collective tasks. The FM 1-100 series does not address the development of training to support these TTPs nor outline the frequency requirement or number of iterations to maintain proficiency. Nowhere in the TC 1-210 does it establish a requirement to document collective training in order to track how often a unit trained a collective task and to what standard.

TC 1-210 also refers commanders to other publications such as the Army Training and Evaluation Program 1-385-MTP and the ATM for conducting training. Neither of these documents mandates a frequency and documentation requirement for collective training. Appendix A of the MTP describes the Combined Arms Training Strategy (CATS). The strategy recommends a training frequency at a specific unit level utilizing a specific training medium (i.e., situational training exercises, field training exercises, fire coordination exercises, etc.). It does not identify any specific collective tasks to be trained to maintain proficiency in those tasks. For example, the CATS recommends that a unit train at company level during a field training exercise (FTX) four times annually.

The strategy falls short of specifying which tasks must be accomplished and under what conditions. The CATS document serves mainly to guide commanders through an annual training cycle. This document is not regulatory; therefore, it is not mandatory for units to follow.

"The commander plans, prepares, executes, and evaluates training based on the METL" (Headquarters, Department of the Army, TC 1-210 1996, 1-5). This is the extent of detail given to unit commanders in the development of a collective training program. TC 1-210 does not outline techniques, frequency, currency, or documentation of collective training to support the commander's assessment of the unit's collective training status. This assessment of how well his or her unit is trained is based on the commander's subjective evaluation. Many units do this well, however, there is no regulatory requirement to ensure that the required amount of training is being conducted at a level to sustain or even attain proficiency.

The MTP does outline clear standards for collective tasks, but not a training frequency to attain proficiency. The TC 1-210 also establishes how commanders can create a battle task to support a particular METL task and quantify it by creating conditions and standards to support the task. It fails to outline training guidance or procedures to follow to ensure that proficiency is attained in these tasks.

This study does not conclude that some units are unable to become trained and experienced in collective tasks. Any unit can train to proficiency on collective tasks. The success of a unit's training program is based on an understanding of how to train units on collective tasks. The commander, another individual, or group of individuals

within the unit must possess the ability to understand how people learn and establish training plans that support this understanding.

USAAVNC trains every helicopter pilot in the U.S. Army. Professionals there have devoted much of their lives developing and revising training plans to maximize instructor training based on how people learn. The instructor pilot training courses at USAAVNC have a specific portion of the curriculum dedicated to this area. Instructors teach from principles outlined in the *Fundamentals of Instruction* manual. Although the manual covers many areas, one area is particularly applicable to this study. This area addresses the six "Laws of Learning." They are:

1. Law of Readiness. People must be motivated to learn based on their own goals and objectives. This willingness to learn should be individual. But, leaders should make training relevant to motivate soldiers to learn.

2. Law of Exercise. This law states that the more frequent the training, the more likely a student will be to retain it. This follows closely with the FM 25-101 fundamental of frequency.

3. Law of Effect. Learning is better when resulting from pleasant experiences, rather than unpleasant ones. Leaders should do quality training. If training is done poorly, then soldiers are less likely to remember the important teaching points.

4. Law of Primacy. This law states that whatever technique or procedure a student learns first, that is the technique that he learns best. This law applies to both good and bad habits. Learning what good training looks like is paramount. Young lieutenants will soon be young captains. If they never learn how to train or learn poor training, then

they are likely to be poor trainers themselves. Commanders are the primary trainers in a unit.

5. Law of Intensity. Vivid, multi-sensory stimulating experiences are best learned. Make training realistic.

6. Law of Recency. The law that affirms the tasks learned last are best remembered. This law follows the intent of frequent training from FM 25-101.

The training principles from FM 25-101 do link well to the laws of learning from the *Fundamentals of Instruction*. Multiecheloned, challenging, performance-oriented, and training as a combined arms team are characteristics of quality training. The Army's training should demonstrate to junior leaders how to train correctly the first time. Training should possess positive effect and intensity. Repeating the training often is critical. These elements create individual perceptions that allow a soldier to draw insights and internalize training. According to the *Fundamentals of Instruction*, this perception and insight along with motivation form the basis of how people learn.

Individual training is the foundation for collective training skills. Individual proficiency is not the end state; collective experience and proficiency is the end state. In accordance with FM 25-101, the frequency of training is crucial to the maintenance of any level of proficiency. Therefore, collective experience is more of a journey than an end state. Units may become trained and experienced, but must continue to train collectively to maintain that level.

Both TC 1-210 and FM 25-101 adequately establish that the commander is the primary trainer and is responsible for the ATP. TC 1-210 goes further to state, "with assistance from the unit instructor pilot, the aviation platoon leader is responsible for

individual training" (Headquarters, Department of the Army, TC 1-210 1996, 1-3). Platoon leaders and instructor pilots also train the crews. In accordance with TC 1-210, commanders are responsible for the ATP and, therefore, are responsible for all training, individual through collective. The commander is the one individual responsible for integrating individual training with crew training by using the ATM and the unit's METL. According to DES, some commanders fail to understand this concept or adhere to it. One common trend identified throughout the Army was "collective and individual and crew training not balanced" (DES 1999).

FAC Designation and Simulator Requirements

According to TC 1-210, commanders may designate certain positions as FAC 3 based on METL requirements. Designating aviators as FAC 3 is actually detrimental to METL requirements. A unit's METL is a list of essential tasks that must be accomplished to successfully complete a mission. For an AH-64A Apache battalion, the mission is "to destroy massed enemy mechanized forces and other forces with aerial firepower, mobility, and shock effect" (Headquarters, Department of the Army, FM 1-112 1991, 1-3). The FAC 3 designation is used as a means to save flight hours. FAC 3 hours are saved by taking FAC 3 aviators out of the cockpit and requiring them to maintain simulator minimums only. The hours, in turn, are redistributed within the unit to allow other aviators to fly aircraft hours, which are in short supply. The intent was to maintain a higher level of proficiency and experience with the front-line pilots by taking hours away from FAC 3 aviators. What it does is takes flight hours away from inexperienced aviators and makes them even more inexperienced.

The FAC 3 designation has a long-term impact on experience. In accordance with the ATM, a FAC 1 aviator is required to fly seventy flight hours semiannually. The ATM allows for a maximum of twelve hours to be flown in the Combat Mission Simulator (CMS); thus, reducing the semiannual requirement to fifty-eight flight hours. This indicates that the CMS is 17 percent as effective as an actual flight hour in the aircraft (12 / 70 = .17). On the other hand, the FAC 3 aviator has no aircraft semiannual requirements, yet must maintain a simulator minimum of twenty-four CMS hours semiannually. In effect, the FAC 3 aviator is only receiving the equivalent of four aircraft flight hours semiannually as compared to the seventy that a FAC 1 aviator receives without using the CMS reduction. The simplistic formula is based on the fact that twenty-four hours is 35 percent of seventy hours and a CMS hour is 17 percent as effective as an actual aircraft hour. Therefore, a FAC 3 aviator receives 65 percent less training in a simulator that is 17 percent as effective as the actual aircraft. Six CMS hours multiplied by 17 percent (effectiveness) equals 1.02 aircraft hours. Thus, twenty-four CMS hours equals four actual aircraft hours.

This is hardly conducive to accomplishing METL requirements for the FAC 3 aviator. Looking at the long-term impact, a FAC 3 aviator would fly the CMS for 17.5 years to develop the same experience as a FAC 1 aviator receives in one year (140 times 6 equals 840, divided by 48 hours annually, equals 17.5).

This being the case, the FAC 3 designation does not provide aviators with tough, realistic training, nor does it allow the opportunity to integrate all elements of the combined arms team as part of training since the CMS is an individual and crew trainer only. Allowing an aviator to remain FAC 3 rather than off flight status does provide the

aviator the opportunity to at least practice, at least on a very limited scale, the motor memory functions for basic locations of switches and their appropriate functions. This familiarization has limited value on an individual task, but virtually no value in the proficiency of collective tasks.

The Army has become aware of the pitfalls of the FAC 3 designation; however, little has been done to compensate for its impact on readiness and experience. In the 1st Battalion, 101st Airborne Division, for example, seven members of the battalion's ATP are designated FAC 3. The combined average level of flight experience of all seven is 542 hours of total flight time and the average number of hours in the AH-64A is 286. If experience were judged solely on flight hours, these aviators are not very experienced. Regardless, they were designated FAC 3. Unfortunately, most units base the FAC designation on duty position without regard to the individual's flight experience level. This is not the intent of the ATP. The ATP should be tailored to best support aviators to ensure that they are prepared for combat. "Initial assignment aviators should never be designated FAC 3" (USAAVNC 1998). According to the 1-101st Aviation Regiment Operations section, all seven of its soldiers who were FAC 3 were designated FAC 2 in October 1999. Although the correct approach to prevent any further slip in aviator experience, it may also prove costly since the units requested additional flight hours to accommodate the increase required to support the newly designated FAC 2 aviators. The impact on maintenance and repair parts costs remains uncertain. It may not surface for months. Or there may not be a negative impact at all. An increase in flight hours should also create an increase in ammunition. The goal is to increase an aviator's experience.

Part of that experience is the aviator's ability to fire the weapons systems. Gunnery skills are an important aspect of an Apache pilot's proficiency and experience.

A perfect supplement to actual aircraft collective training is the effective use of simulation devices. Collective simulation devices can replicate battlefield conditions, other combat arms, combat support, and combat service support units to enable aviation crews to train as a combined arms team. Collective simulators can allow unit commanders to fire and maneuver their units in order to bring the necessary massed weapons effects on an enemy. This synchronization is crucial to the concept of *training as we will fight*. Training can be rigorous with a threat array that challenges crews and their leaders to improve while they become more experienced and proficient as a collective force. Aviators can be forced to react to changing battlefield conditions, such as chemical, biological, or nuclear threats. They can experience the deterioration of weather conditions that cause them to adjust how they fight. Environmental conditions can change enabling aircrews to learn how to accurately plan aircraft performance based on these changes. Staff sections from higher headquarters can also participate. This adds a multiechelon dimension to training. Most importantly, the commander and aviators have the capability to conduct after-action reviews immediately following the collective training event. They can use state-of-the-art technology to play back portions of the battle to accurately assess how well the unit performed, and go back and do it again and again until they gain the experience and knowledge of what right looks like. This meaningful repetition is critical to the learning process, as noted in the *Fundamentals of Instruction* manual published by USAAVNC.

Unfortunately, there are no collective simulation devices for the AH-64A Apache or any other fielded aircraft in the Army's inventory. The CMS is an individual and crew training device with certain limitations. The CMS does not replicate any other free play aircraft that can be useful in a collective scenario. Nor is there a capability to replicate other combat, combat support, or combat service support units to facilitate training as a combined arms team. Therefore, any performance-oriented training must be at the individual and crew level. The CMS does not accurately replicate the actual aircraft in its current configuration. Over the past several years, the CMS has failed to keep pace with improvements to the AH-64A, such as embedded global positioning system (EGI), upgrades to the fire control computer (FCC), and the addition of the single channel ground and airborne radio system (SINCGARS). This causes a decrease in the ability to train even individuals and crews to an acceptable level.

The EGI is an embedded global positioning system that replaced the doppler as the primary navigation instrument in the Apache. This system is far more accurate than the doppler. It is also more complex. The EGI receives position information from satellites orbiting around the earth. The doppler is a velocity measuring instrument. It is prone to drifting and losing accuracy over time. The EGI, on the other hand, constantly updates itself from satellites, thus preventing drift. This advanced technology requires training. Aviators must learn to operate this system and maintain this proficiency over time. Without the EGI replication in the CMS, it is useless as a navigation trainer.

The FCC is the Apache's fire control computer. As with any computer, the FCC relies on software updates to maximize use of the system. Budgetary limitations have precluded upgrading the CMS with the most recent software changes. Thus, the aircraft

functions differently than the simulator resulting in degradation of the CMS's effectiveness as a trainer.

The SINCGARS is an upgrade to the Apache's radio suite. Every Apache in the Army's inventory is scheduled to receive this upgrade. To date, all active duty units have the new radio. It operates similarly to previously fielded radios, but it is programmed completely differently. Again, the CMS has not been upgraded with this capability. Without this replication, certain radio communication tasks cannot be effectively trained in the CMS.

In addition to these deficiencies, the CMS fails to incorporate other essential changes in the basic aircraft configuration. Neither the Area Weapon System (AWS) improvements nor the integration of the 701C engine data has been incorporated. The engine data is critical to the recognition and proper execution of certain emergency procedures. The CMS does not accurately replicate the Target Acquisition and Designation System (TADS) improvements, the Havequick II radio procedures, or the Laser Warning Receiver.

Overall, the CMS has certain capabilities to make it useful. But, without upgrading to keep up with advancing technology, its effectiveness is degraded. One benefit that is still gained from the CMS is the ability for the commander to participate and assess crew performance. The CMS has additional seating in the device for other personnel to monitor training while in progress. This is a good method for commanders, platoon leaders, and instructors to gain insight into a crew's strengths and weaknesses; however, it is often times not utilized. The DES found that command involvement during CMS periods is not the norm. Leaders are missing a huge opportunity to assess and

adjust training to make a positive impact on proficiency. DES also infers that had the CMS been properly utilized, proficiency would not have suffered as much as it has. In fact, 48 percent of pilots evaluated across the Army during the first quarter of 1999 resulted in unsatisfactory evaluations (DES 1999).

The ability to train collectively under challenging conditions is certainly a function of technology. This technology exists today, but not in the Army's simulators. To make training challenging, commanders must get involved. Simulators can be a great complement to live training, but should never replace it.

> There is no fear of injury or death in a virtual simulator, crewmembers and leaders tend to approach training differently, either consciously or subconsciously, than they would if conducting the training while flying an actual aircraft . . . a crew member's bold action in a virtual simulator may not translate into bold actions in an actual aircraft in combat. In other words, it may be impossible to trick the crewmember into a state of fear in a simulator . . . . Even though observers may see some signs of confusion or excitement in crewmembers in the simulator, the translation of performance between the simulator and the actual aircraft is likely impacted by many additional variables . . . in short, risk. Because of risk, it is important that simulators are companions to live training, not replacements. (Williams 1997, 79)

The anxiety created from fear of death or injury can never be replicated in a simulator, but with the right command influence and involvement, training in the CMS can be more productive. Poor simulator programs also result from a lack of a collective training focus that stresses the importance of quality, tough, frequent, and documented training. Not all commanders understand the importance of these principles. It is apparent that in order for all to understand, it is necessary not only to make collective training mandatory but also to dictate the frequency of training and associated conditions.

Additional Training Requirements (Including External Factors)

The TC 1-210 does specify the requirement to train under differing environmental conditions. These specific requirements are outlined in both TC 1-210 and TC 1-214. They require units to train according to the environment that they are operating in. For example, if a unit is operating in a cold weather environment, the unit needs to train snow operations, the same for mountain, desert, and other terrain. There is no specific requirement to train under simulated max gross weight conditions as would be required in a combat scenario. Aviators are required, in accordance with the ATM, to verify performance planning for the aircraft under the anticipated environmental conditions. Since there is no documented requirement to train under these maximum gross weight conditions, units do not train to this environment. As a result, the USASC cited power management as a contributing factor to several aviation accidents, as discussed in an earlier chapter.

Failing to train as the unit will fight contradicts one of the most important principles of training in FM 25-101. Not only does it fail to challenge aviators during training, it also eliminates the opportunity to evaluate them based on performance under combat conditions. The Department of the Army recognized this power management training deficiency. As a result, the USASC published an Aviation Safety Alert Notification, dated 13 August 1999. It reminds units and leaders to verify the performance planning data for each flight. It states, "Instructor pilots and unit trainers need to emphasize the importance of proper aircraft performance planning as well as the application of that data to the mission" (USASC 1999). The entire message restates the importance of planning. This is undoubtedly necessary. But it fails to provide any

action. It merely emphasizes the need to plan. Instruction only transfers into learning when units conduct practical exercise to reinforce the instruction. Units must develop programs that train under maximum gross weight conditions. Merely talking about it will not correct the problem. The deficiency is causing accidents. It is confirmed in the alert notification. The Army should remedy the problem by making the training mandatory. Then, every unit would do it. Units would train more like they fight, be challenged, and demonstrate performance-oriented training.

If this training is mandated, units should continue to train under these conditions. This brings a requirement to do the training with some frequency. To effectively accomplish this, units must have an iteration requirement to maintain proficiency. There is currently no mandated training or iteration requirement to conduct training under these conditions.

Night System and Aircraft Currency Requirements

General currency requirements are established in accordance with the ATM. This currency applies only to individual aviators. For example, in accordance with TC 1-214, an AH-64A aviator must complete a one-hour flight every sixty days using the Night Vision System (NVS) either at night, during the day with blackout curtains installed, or in the CMS. The aviator must also complete a one-hour flight in the aircraft using the Night Vision Sensor (NVS) at night every 120 days. If an aviator's currency has lapsed, he or she must demonstrate proficiency to an instructor pilot in all NVS tasks outlined in the ATM prior to resuming normal flight duties.

This requirement is a perfect example of mandating frequency and repetition to maintain proficiency. It is necessary to ensure that aviators can perform their mission

under specific conditions. There is, however, no collective currency requirement. Units are not required to perform collective tasks under NVS conditions. This lack of regulatory guidance allows units to self-assess their collective NVS training status without having the requirement to perform these collective tasks with any frequency. With the current guidance, a commander can assess his or her company as trained and ready for combat without ever having completed a collective training event under NVS conditions. As long as the individual aviators maintain currency, it is completely authorized. This subjective standard creates a dangerous scenario in which a collectively untrained unit may be called upon to perform a mission for which they are unprepared.

Additionally, it is difficult to verify the frequency of training since there is no documentation requirement for collective training. As stated earlier, the instructor pilot is the commander's tool for training individual aviators. Commanders cannot effectively evaluate the collective status of their unit without performing their METL tasks collectively under NVS conditions.

All NVS flights are challenging, much more so than missions in the daylight hours. This is corroborated by the increased risk factor associated with NVS flights on the standard risk assessment worksheet. Similar to the increase in risk based on individual flight experience, flights under NVS are given a higher risk factor because of the more challenging environment. In accordance with AR 95-1, "1 flight hour flown under NVS conditions is equal to 2.3 hours of day flight based on stress and fatigue associated with the NVS flight" (Headquarters, Department of the Army, AR 95-1 1997, Table 3-1). Collective missions flown under the NVS are an even higher risk because of the added complexity. Therefore, collective training missions under NVS should be

flown more frequently in order to reduce risk and attain proficiency. Without a requirement to document this training and require currency iterations on these missions, many units may never truly reach this collective proficiency level.

Flying Hour Programming to Support the Unit's Training Plan

> The DA flying-hour program is a consolidation of requirements from subordinate commands. Aircraft are assigned to TOE units to meet combat requirements. During peacetime, these aircraft are used to train aviation and ground units for combat. Aircraft are also assigned to TDA units to meet other essential mission requirements. This chapter provides guidance for developing Flight Hour Programs (FHP) for TOE or TDA aviation units. (Headquarters, Department of the Army, TC 1-210 1996, 6-1)

The following is a direct extrapolation from TC 1-210, chapter 6. The numbers involved are replaced with an average AH-64A battalion's data to forecast annual flight hours. According to TC 1-210, these numbers represent the minimum number of flying hours needed to maintain individual, crew, and unit proficiency. They also include those hours required to train supported units to ARTEP mission training plan standards. To achieve the ideal balance of readiness at the lowest cost, commanders must consider:

1. Crew member density
2. Annual crew member turnover
3. Number of aircraft assigned
4. Mission support requirements
5. Number of hours necessary for aircraft maintenance
6. Current status of aviation and supported unit training

The number of flying hours required for training depends on the number of assigned crew members. Total training hours required for each crew member are listed in the appropriate ATM. When computing flying hours for their unit's Flight Hour Program (FHP), commanders must consider only pilot hours for each aviator. They also must

consider the hours required to train a nonrated crew member in actual aircraft handling. If a compatible simulation device is available, they subtract the hours flown in the simulation device from the total training hour requirements for each crew member assigned.

Example. Flying hours for individual aviators were based on the sample numbers which accurately reflect an average attack battalion. Actual numbers for each unit may vary.

1. AH-64A aviators assigned--65 (based on the current TOE)

2. Annual aviator turnover rate--33 percent (derived from past replacement experience)

3. Estimated number of newly assigned aviators to undergo qualification, refresher, or mission training--22 (33 percent x 65)

4. Qualification training planning factor—N/A (all AH-64A aviators are trained at USAAVVNC)

5. Refresher training planning factor--30 hours

6. Mission training planning factor--20 hours

7. Continuation training planning factor--58 hours (pilot) for FAC 1 aviators and 38 hours (pilot) for FAC 2 aviators

The steps below show how to calculate aviator training requirements. (Assume that a compatible simulation device is available and that all newly assigned aviators will be placed in FAC 1 positions.)

1. Determine the number of hours required for newly assigned aviators.

a. Qualification training requirements—N/A = 0

b. Refresher training requirements--aviators (22) x refresher training hours (30) = 660 hours

c. Mission training requirements--aviators (22) x mission training hours (20) = 440 hours

d. Continuation training requirements--aviators (22) x continuation training hours (58) x 3/4 = 957 hours

Note: The fraction 3/4 used in (d) above is the estimated portion of the training year remaining for newly assigned aviators to complete continuation training.

e. Total hours for newly assigned aviators--qualification training hours (0) + refresher training hours (660) + mission training hours (440) + continuation training hours (957) = 2,057 hours

2. Determine the number of hours required for the remainder of the unit's continuation training [continuation training hours (58) x (28) FAC 1 aviators + (38) x (15) FAC 2 aviators = 2,194 hours].

Note: FAC 2 number is based on an average battalion having approximately 23% of its aviators in a FAC 2 position.

3. Add the number of hours in (1)(e) and (2) above to determine the number of training hours required (2,057 + 2,194 = 4,251 hours).

To compute the remainder of the battalion's annual flight hour requirement, forecasters address operational requirements. Operational requirements fall into 10 general areas.

1. Combat, combat support, and combat service support

a. Logistics

b. Firepower

c. Maneuver and troop lift

d. Command, control, and communications

e. Intelligence, reconnaissance, and security

2. Training and training support

a. Formal resident flight training

b. Support of installation training activities

c. Support of Army service schools' programs of instruction

d. Technical aviation operations and aircraft maintenance training

3. Executive and staff transport (support of local administrative, executive, and inspection functions)

4. Support of assigned crew members, staff personnel assigned to flying duty, or RC crew members

5. Research, development, test, and evaluation

6. Aerial photography and mapping

7. Aeromedical evacuation, crash rescue, or search and rescue

8. Intelligence and classified projects

9. Attaches, missions, and Military Assistance Advisory Groups

10. Special missions unique to location or operation

Supported units must project annual support requirements and report them to their aviation commanders. These requirements should identify the hours of support needed in each of the general areas above.

In all aviation units, collective training should be coordinated with operational missions. This normally will not require additional flying hours.

Because of safety and standardization considerations, aviation units require some flying hours solely for individual training. In this section, these hours are called individual training hours. They are required for training and evaluating newly assigned crew members and conducting special training that cannot be done during operational and collective training missions. These hours constitute the refresher and mission training hours for newly assigned aviators (1,100 hours).

Commanders must determine how to satisfy both training and support requirements. After forecasting hours for operational and collective training missions, they should design missions that can accomplish aviation training and still meet operational requirements. If operational requirements exceed the training hours available, commanders may increase their total flying-hour requirements or decrease the flying hours available for operational missions or training.

Factors that influence a commander's decision include budget constraints, the nature of operational missions, the present level of training readiness, and maintenance support capabilities. Commanders should remember that any decrease in individual training hours will result in a loss of individual proficiency and a corresponding decay in unit readiness.

In addition to programming hours for training and operational requirements, commanders must estimate the hours necessary for maintenance. As a rule, 5 percent of the total number of hours in the FHP is an appropriate estimate of the maintenance hours required. For an AH-64A battalion, it is reasonable to estimate 10 percent. Commanders

may adjust this estimate based on variables such as aircraft age and local flying conditions (i.e., sand, dust, etc.).

Table 3 shows the first step of the two-step process for computing an FHP. In Table 4, 10 percent is added for maintenance and completes the second step of the process.

Table 3. Step one of a sample FHP computation

Total mission support hours required	4,514
Installation support and gunnery	800
Collective training: [4 x BN FTX, 1 x EXEVAL, 72 x Co. STX (24 per Co), 144 PLT STX (24 per PLT); (collective training data is from the Combined Arms Training Strategy)	2,964
CTC rotation (including self-deployment)	750
Individual training hours required	1100
Total mission support and individual training hours required	5,614
Total training hours required	4,251
Total difference (if following the CATS)	-1,363

Source: TC 1-210, 1996, Fig. 6-1. Sample FHP computation (first step)

Table 4. Step two of the FHP computation

Total training hours required and operational hours	5,614
Maintenance hours required (4,864 x .10)	561
Total hours	6,175
Hours programmed as follows:	
Individual training	1,100
Maintenance	486
Installation support	800
Collective training support	2,964
CTC support	750
Total hours	6,175
NOTE: The FHP for a unit with 24 AH-64A aircraft assigned is 14.5 hours per aircraft per month totaling 4,176 hours.	

Source: TC 1-210, 1996, Fig. 6-1. Sample FHP computation (second step)

In table 4, the 1,100 hours that make up the individual training hours represents the assumption that every newly assigned aviator requires refresher training and full mission training. For most units, this is not the case. In fact, the number of hours needed for this training could be reduced based on the experience level of newly assigned aviators. This formula is based on planning for the least trained replacement aviators.

The AH-64 battalions are allocated 4,176 flight hours per battalion. The 4,176 flight hours appear to be insufficient to complete required training. Following the CATS model of training, the battalion would fly 48 percent (2,964 / 6,175) of its flight hours in support of collective training. But, since the battalion only receives 4,176 hours, the easiest place to cut hours is in the collective training category. With the given hours, the battalion would train only 23 percent (965 / 4,176) on collective training events.

This examination does not consider any aviator as being in a FAC 3 designated position. But even in the case of the 1-101st Aviation Regiment that was covered earlier, the seven FAC 3 aviators would only account for 812 hours of annual flight time for this unit. The unit still has a decrement of 1,187 flight hours. The flight hours funded for each AH-64 battalion is inadequate.

Additional Findings

The purpose of this section is to document the findings of concurrent research conducted by several other organizations. Since the issue of aviator inexperience is such a major concern, USAAVNC is working to identify what may cause this problem and find solutions. Congress' House Arms Services Committee on Military Readiness probed the issue of aviator experience. From this probe in July 1999, the Chief of Staff of the

Army directed the Commanding General of USAAVNC to conduct a year-long investigation to determine the cause of aviator inexperience.

To date, several findings are noted. First, according to USAAVNC, the largest contributor to inexperience is the reorganized aviation force structure as a result of the Aviation Restructuring Initiative. The conversion under ARI changed the aircrew to aircraft ratio from 1 to 1 to the new ratio of 1.31 to 1. In the case of the AH-64 battalions, this means that thirty-three aircrews exist with a fleet of only twenty-four aircraft. On paper, this did not appear to present a problem. However, resourcing for flight hours continued under the pre-ARI model which resources flight hours by airframe and not by number of aircrews. As a result, the net effect is a decrease in annual flying hours from 180 hours per crew to 120 hours per crew.

Second, as a result of the shortfall in resources, the unit commander placed more aviators in a FAC 3 designation. This shift of aviators to nonflying positions allows commanders to allocate more flight hours to their line crews. The net result is that many aviators are not gaining experience in the cockpit. As noted earlier in the thesis, the simulator requirements placed on a FAC 3 aviator fall significantly short of the requirements necessary to maintain proficiency and experience. Overall, this shift to nonflying positions led directly to a decline in aviator experience.

Third, increasing the technology in the aircraft causes aviator skills to perish at a more rapid rate. More technologically complex aircraft require more training to maintain proficiency. Because of the resource model under the pre-ARI model does not support this additional training, aviator proficiency, and experience declined.

To solve the erosion of experience, USAAVNC is currently developing a task-based training strategy that corrects the deficiencies in the ARI organization. The new strategy depends heavily on a combination of live training and simulation training, both individual and collective. The Aviation Combined Arms Tactical Trainer is the collective simulator that provides the medium for this strategy. The USAAVNC successfully found funding for this collective device, and it is currently in production. This system should be fielded to the aviation units in fiscal year 2001.

The USAAVNC also recommends the elimination of the FAC 3 designation. This shift to eliminate the FAC 3 designation is incorporated into the next edition of TC 1-210. The staffing of the new TC 1-210 is scheduled for the second quarter of fiscal year 2000.

Updating legacy flight simulators to better replicate the actual aircraft is a major issue. The USAAVNC is searching for funding to accomplish this task. Korea-based units determined that the lack of compatibility created a training void. Therefore, Korea-based units funded certain, but not all, simulator upgrades within their own allocated budget. Forces Command units and Europe based units are seeking funding strategies similar to the Korea-based unit's solution.

Since a void exists from the lack of adequate simulators, beginning in fiscal year 2000, the flight hour programming is based on number of aircrews. This represents a shift from the pre-ARI model of funding by airframe.

CHAPTER 5

CONCLUSIONS

According to research, the Aviation Branch does have an inexperience problem. But, the perception that this inexperience is largely an individual problem is not necessarily the case. Aviation units must strike a balance between individual and collective training. It is difficult, but not impossible. As a matter of fact, some units train very effectively in all areas. Training is leader business. Commanders must ensure that their units are trained and prepared. Because of large resource requirements to train individual, crew, and collective tasks, it is imperative that commanders strive to create a balance between all training and maintenance within the unit.

Training is not always easy. There are many distractors and restrictions that prevent units from conducting quality training. One good example is the "Law of 3." Typically there are three ground maneuver brigades to each Army division. To train as a combined arms team, whenever a ground brigade goes to the field, they take along pieces from other units to get the combined arms effect. There is one aviation brigade, with only one AH-64 battalion. Unit training cycles usually rotate between green, yellow, and red. For example, green cycle units are conducting field training. During yellow cycle, units are recovering from the field. Red cycle is extensive preparation to conduct field training. Aviation units must support each ground maneuver brigade during their cycles; therefore, aviation units have less recovery time between cycles. Less recovery time adversely impacts the training within the aviation battalions. The training cycles are different, but not impossible to manage. The training cycles in FM 25-101 are designed for the ground maneuver brigades, not necessarily for the units that support them.

Managing the cycles of training limits the time available to conduct mandatory individual training. This, in turn, takes away from collective training time.

From the research, there are several areas that contribute to the lack of experience and proficiency of aviators.

1. Lack of documentation and iteration requirement for collective training.

2. FAC 3 aviator designation is detrimental to aviator readiness and experience.

3. Collective simulation devices are nonexistent, failing to provide adequate level of training.

4. No teeth in the aviation environmental training program. It lacks documentation and iteration requirements.

5. Flight hour programming fails to accurately fund collective training in accordance with the CATS.

Discussion 1. Training aviators at the individual and collective level is paramount. Individual training requirements are mandated in the Aircrew Training Program. The training requires documentation to support the training as a means to determine unit readiness and to ensure all required training is conducted. Collective training is equally as important. However, in accordance with TC 1-210, this training has no requirement to be conducted or documented. The same is true with frequency and iteration requirements. Above the individual level, no requirement exists to execute a given number of collective tasks under given conditions.

Recommendation 1. The USAAVNC should assess the training requirements for collective tasks. The combined arms training strategy that outlines an annual training frequency of collective tasks should be made mandatory within the Aircrew Training

Program. Units should be required to document collective training events at company and battalion level. The unit readiness should still be subjective, but linked to this collective training requirement. To adequately incorporate the collective iteration and documentation requirements, TC 1-210 and TC 1-214 should be revised to include these requirements. The USAAVNC is currently developing a new combined arms training strategy. This new strategy is very heavily reliant on the capabilities of collective simulation devices. Currently, these simulation devices do not exist or have not been fielded to units across the Army. It is necessary to look ahead to ensure the aviation training needs of the future are met. But, it is very necessary to develop a training strategy that allows currently fielded units to maintain the necessary level of proficiency needed to fulfill ongoing requirements. In other words, an interim training strategy needs to be developed to address the issue of decreased experience and proficiency.

Discussion 2. It is no surprise to the aviation community that the FAC 3 designation is detrimental to individual aviator readiness. As a result, it adversely impacts collective readiness. Aviators taken out of the cockpit have little opportunity to grow and expand their aviation experience level.

Recommendation 2. The USAAVNC should assess the FAC 3 designation to determine overall impact to readiness. The research suggests that the FAC 3 designation should be removed, if the goal is to maintain an experienced aviation force. The USAAVNC should analyze the impact to the flight hour budget and maintenance costs associated with placing all aviators in FAC 1 or FAC 2 positions. If fiscally feasible, this would allow aviators to continue to build experience. More experienced aviators means more experienced leaders that are capable of dealing with the ever-changing battlefield

the military may face in the future. During the conduct of this thesis research, the USAAVNC developed more specific guidance on the designation of FAC 3 aviators. Recommendations are made for the complete elimination of the FAC 3 designation in accordance with the next edition of TC 1-210. The new Commander's Guide to the Aircrew Training Program is being staffed at USAAVNC during the second quarter of fiscal year 2000.

Discussion 3. Simulation devices could be an outstanding supplement to live training. Both individual and collective simulators are needed to properly train crews. The Directorate of Training, Doctrine, and Simulation in Fort Rucker, Alabama, is working hard to fill these requirements. But, simulation devices are expensive to build and keep current with the changing aircraft configurations. Regardless, they are necessary.

Recommendation 3. The USAAVNC should continue to seek funding to upgrade existing simulators and build new simulators to keep up with the growing technology of the Army's aircraft fleet, even given the cost of these devices. In the interim, units should request annual flight hours that represent their actual requirements to compensate for the lack of adequate simulation devices. If collective training were mandated in accordance with the CATS, the annual flight hour requirement would be much larger than units are currently given. Simulations are the means to reduce these actual flight hour requirements in the future. But, the technology does not exist in the field today. The USAAVNC successfully funded an increase in the annual flying hour program to allocate hours based on number of aviators instead of number of airframes. Further study may be

necessary to determine if this increase will be adequate given the more complex aircraft being flown today.

Discussion 4. The environmental training program outlined in the ATP begins to address the need to train under varying conditions. It fails to add "teeth" to the program. There is no iteration or documentation requirement beyond a one-time check for certain environmental conditions. There is no requirement for crews to train with their aircraft operating at weights that replicate that on the battlefield. This places the crew at risk when asked to operate at this weight in a combat scenario. The USASC has cited power management as a major contributor to accidents. This shortcoming can be corrected with proper training. Today commanders can make this training mandatory by adding additional tasks and conditions to their Commander's Task List. However, training under these conditions is not mandatory throughout the Army.

Recommendation 4. Units should routinely train with aircraft gross weights that replicate that in combat. The USAAVNC and DES should examine the need to make this training mandatory. This training should be required with a certain frequency and documentation to verify compliance. Safety Alert Notifications are a good tool to send information to the field. But, they fall short of being directive. Alert notifications should be supported with some training plan to correct a deficiency. Simply stating that a problem exists does not correct the problem.

Discussion 5. If units conducted training as outlined in the CATS, the flight hours programmed to support training are insufficient. To maintain proficiency, units must continue to train rigorously and often. The Army will continue to call on aviation to perform difficult missions. Aviation soldiers know and enjoy it. The Army should

resource units to a level that ensures proficiency. Proficiency is crucial to safe and effective aviation operations.

Recommendation 5. Flight hour programming should support the CATS. If the frequency recommendations in the CATS are cost prohibitive, then reassess the CATS. The goal is proficiency at the collective level. Some units can reach this level under the current flight hour program. But, many cannot. The USAAVNC is currently looking at ways to redefine the CATS. But this new strategy is dependent on a collective simulation device that does not exist in the Army's fielded units today.

Summary. Concern over aviator inexperience is well founded. The thesis does not affirm that all units suffer from this inexperience. But, the truth is that some do. With today's aircraft becoming more complex, the USAAVNC should take a close look at the future training requirements for aviators to maintain proficiency. A fix may be forthcoming with the increasing technology of simulation devices. These devices may help offset some of the actual flight hour requirements needed to maintain proficiency. In the interim, the Army and the Aviation Branch should assess how well their current training doctrine supports aviator proficiency in the field. Future training requirements will likely become more complex. It is doubtful that it will become any less expensive. Aviation units are depended on heavily to support Army missions worldwide. Whatever the cost, the Army should resource these units to ensure that they are prepared for these missions.

FUTURE STUDY

1. There exists an opportunity for future study into the current organizational structure of Army aviation units. Studies to determine the impact that ARI has on units across the Army may help provide a better force mixture that supports operational missions and aviator proficiency.

2. Since the new CATS relies heavily on a collective simulation capability that does not currently exist, a careful study of its feasibility should be done to ensure it meets the Aviation Branch's needs. A study of an interim training strategy should be conducted to determine how to rectify the existing inexperience problem.

3. Future studies into the simulator requirements are necessary. These studies should determine if the proposed simulation devices adequately train aviators to the fidelity necessary to maintain proficiency.

4. Concurrent with the new CATS, the USAAVNC is revising the TC 1-210 document (at which time it will be redesignated the TC 1-200). A study should be conducted to determine if these revisions better allow aviators to maintain proficiency.

5. Aircraft in the Army inventory are far more complex than aircraft in previous years. A study should be done to ensure that adjustments in aviation training doctrine and strategy support these technologically complex aircraft. As the Army fields newer aircraft like the *Longbow* and *Comanche*, new assessments should be completed to ensure that aviators are provided the resources to maintain proficiency and experience.

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